Title: Carbon Content Considerations in Ash Marketing Programs

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Summary

Installation of low NOX burners present potential problems to ash marketing plans due to ash exceeding specified limits on the carbonaceous content for some applications. This paper discusses the relative sensitivity of by-product applications to unburned carbon content and presents considerations in marketing ash to those applications which are less sensitive to ash carbon content.

The most common uses for coal ash is as a concrete additive. Substantial quantities are also used in slurry backfills, as stabilizing agents for soil , roadbase, and industrial wastes, and as structural fill. In total these four applications account for 72% of all U.S. ash use in 1995. From a national perspective, the amount of ash used as a concrete additive has remained more or less constant over the past few years while ash used in structural fills or roadbase applications have declined. These trends have occurred during the period where the total amount of ash generated has increased. Although the quantity of ash used varies year to year, the constant to downward trend in ash use appears to confirm signs that by-product application markets have become saturated under traditional ash marketing programs.

Of the common application areas, use as a concrete additive is the most sensitive to carbon content. Ash used in this application must meet stringent criteria for quality and consistency. Ash quality criteria are not as stringent for use in slurry backfills, as a stabilizing agent and as structural backfill. However, marketing for these uses differs from the approach needed for the concrete additive market. Where in the past, utilities could rely upon brokers to facilitate ash utilization in a market driven by well defined material specification such as ASTM C-618, the burden is now shifted to the generator to define material suitability criteria and deal with user, public, and regulatory concerns. Many utilities have already engaged in these efforts with success.

It is a misnomer to characterize ash marketing as simply selling a by-product from the primary industrial activity of power production. Among the factors that need to be considered in marketing the material is its status as an industrial by-product and its perception by potential users, the public, to regulatory agencies. In Pennsylvania and some other locales, industrial by-products are classed as waste materials under current environmental regulations. Public and user perception of the materials are influenced by the stigma of waste status. When used as a concrete additive, the status of the material is obscured by several factors, including a long history of use, its role as a minor constituent in a stabilized mixture, and a stringent quality specification. For the most part, none of these factors apply to the use of ash in the other alternative applications for high carbon ash. If by-products are to be used in these markets, not only do suitable opportunities need to be identified but the suitability of the material to the user,

the public and to regulators needs to be demonstrated. In these markets, a more comprehensive approach encompassing technical, regulatory, public relations, and other functions is needed in addition to identifying potential projects and users. Competing materials such as foundry sands and slag should not be ignored as potential competitors or as potential role models in methods for conducting successful by-product marketing programs.

A critical but often overlooked factor in ash utilization is the role of the user. Because of liability questions, utilities must be selective in their market operations and weigh carefully the use of by-product materials by certain sectors. Public sector users such as other utilities, authorities and municipalities represent a good fit within the regional context of most marketing programs. Developing this sector is not without pitfalls and problems.

Three examples of the comprehensive development requirements for ash marketing programs can be found in utility programs for flowable fill, structural fill and mine reclamation. Using several Western Pennsylvania case studies we highlight the relative success of strategies and tactics for securing regulatory approvals, public acceptance, and materials qualification.

This paper presents information useful in developing a market profile of potential users. A list of market constraints to be dealt with in resolving conflicts between product and by-product is also presented. This list is general since details will vary depending upon the specifics of an individual organization. Finally, a few comments on including these factors as part of an overall marketing plan are provided.

In conclusion, the critical aspect of ash marketing is that by-products are created regardless of whether a demand exists for it. By-product generation is secondary to the primary industrial activity of power generation. The market to utilize suitable substitute materials is driven on the both generator and user side by avoided costs and reuse incentives. However the incentives are greater from the producer side. The ash marketing process is essential to rectify end effects of changes in process required for the primary activity that can disrupt the balance between the by-product material and identified applications and markets. It is equally significant to see this also represents an opportunity for additional by-product utilization by developing market segments that are not sensitive to carbon content.